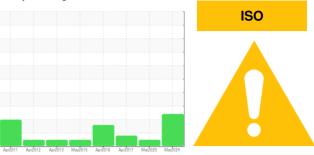


OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id

ALSTOM 3211

Component Hydraulic System ESSO UNIVIS N 32 (55 GAL)

DIAGNOSIS

A Recommendation

We recommend you service the filters on this component if applicable. Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is a high amount of particulates present in the oil.

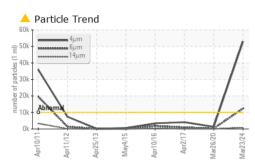
Fluid Condition

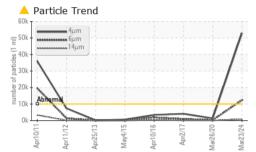
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

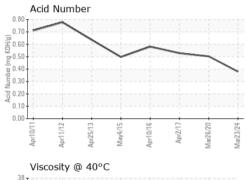
SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0798936	WC0381180	WCM2298470
Sample Date		Client Info		23 Mar 2024	26 Mar 2020	02 Apr 2017
Machine Age	hrs	Client Info		0	0	0
Oil Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				ABNORMAL	NORMAL	ABNORMAL
CONTAMINATION	١	method	limit/base	current	history1	history2
Water		WC Method	>0.1	NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>20	0	2	3
Chromium	ppm	ASTM D5185m	>10	<1	3	6
Nickel	ppm	ASTM D5185m	>10	4	24	25
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m		0	0	0
Aluminum	ppm	ASTM D5185m	>10	<1	0	0
Lead	ppm	ASTM D5185m	>10	11	11	A 20
Copper	ppm	ASTM D5185m	>75	7	10	9
Tin	ppm	ASTM D5185m	>10	<1	<1	4
Antimony	ppm	ASTM D5185m			0	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	.1	0	4	<1
Porium				-		
Dailuili	ppm	ASTM D5185m		0	0	0
	ppm ppm	ASTM D5185m ASTM D5185m	.3	0	0	0
Molybdenum			.3	-		
Molybdenum Manganese	ppm	ASTM D5185m	.3 0	0	0	0
Molybdenum Manganese Magnesium	ppm ppm	ASTM D5185m ASTM D5185m		0	0 <1	0 <1
Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	0	0 0 1	0 <1 1	0 <1 2
Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 74 266	0 0 1 50	0 <1 1 65	0 <1 2 64
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 74 266	0 0 1 50 336	0 <1 1 65 330	0 <1 2 64 367
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 74 266	0 0 1 50 336 461	0 <1 1 65 330 468	0 <1 2 64 367 476
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 74 266 338 limit/base	0 0 1 50 336 461 2552	0 <1 1 65 330 468 2536	0 <1 2 64 367 476 3223
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 74 266 338 limit/base	0 0 1 50 336 461 2552 current	0 <1 1 65 330 468 2536 history1	0 <1 2 64 367 476 3223 history2
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	0 74 266 338 limit/base >20	0 0 1 50 336 461 2552 current 1	0 <1 1 65 330 468 2536 history1 2	0 <1 2 64 367 476 3223 history2 1
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m	0 74 266 338 limit/base >20	0 0 1 50 336 461 2552 current 1 2	0 <1 1 65 330 468 2536 history1 2 <1	0 <1 2 64 367 476 3223 history2 1 4
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 74 266 338 limit/base >20	0 0 1 50 336 461 2552 current 1 2 2 <1	0 <1 1 65 330 468 2536 history1 2 <1 <1	0 <1 2 64 367 476 3223 history2 1 4 <1
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 74 266 338 limit/base >20 limit/base >20 limit/base	0 0 1 50 336 461 2552 current 1 2 2 <1 current	0 <1 1 65 330 468 2536 history1 2 <1 <1 <1 history1	0 <1 2 64 367 476 3223 history2 1 4 <1 history2
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >6µm	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 74 266 338 limit/base >20 limit/base >20 limit/base	0 0 1 50 336 461 2552 <u>current</u> 1 2 2 <1 2 <1 2 <1 53001 ▲ 53001	0 <1 1 65 330 468 2536 history1 2 <1 <1 <1 history1 1343	0 <1 2 64 367 476 3223 history2 1 4 <1 history2 4121
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >6µm Particles >14µm	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7647 ASTM D7647	0 74 266 338 Iimit/base >20 S20 Iimit/base >20 S20 S10000 >1300 >160	0 0 1 50 336 461 2552 <u>current</u> 1 2 <1 2 <1 2 <1 53001 ▲ 53001 ▲ 12368 ▲ 884	0 <1 1 65 330 468 2536 history1 2 <1 <1 <1 history1 1343 266	0 <1 2 64 367 476 3223 history2 1 4 <1 history2 4121 937
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >6µm Particles >14µm Particles >21µm	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	0 74 266 338 Iimit/base >20 S20 Iimit/base >20 S20 S10000 >1300 >160	0 0 1 50 336 461 2552 current 1 2 <1 2 <1 53001 ▲ 12368 &884 ▲ 884	0 <1 1 65 330 468 2536 history1 2 <1 <1 <1 1343 266 23	0 <1 2 64 367 476 3223 history2 1 4 4 <1 history2 4121 937 79
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >6µm Particles >14µm	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647	0 74 266 338 20 >20 20 20 1 mit/base >20 1 0 0 2 1 0000 >1300 >160 >40 >10	0 0 1 50 336 461 2552 <u>current</u> 1 2 <1 2 <1 2 <1 53001 ▲ 53001 ▲ 12368 ▲ 884	0 <1 1 65 330 468 2536 history1 2 <1 <1 <1 1343 266 23 7	0 <1 2 64 367 476 3223 history2 1 4 4 <1 history2 4121 937 79 29

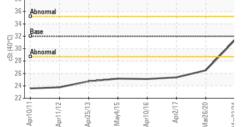


OIL ANALYSIS REPORT





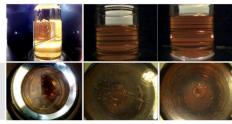




FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045		0.38	0.503	0.528
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	LIGHT	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPERT	IES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	32	31.4	26.5	25.37
SAMPLE IMAGES	6	method	limit/base	current	history1	history2

Color

Bottom



GRAPHS Ferrous Alloys Particle Count 30 491,52 20 122,88 ch 10 30,72 0 ISO 4406:1999 Cle -20 ur11/12 /lar23/24 ar26/70 (per 1 1,920 18 articles 480 Non-ferrous Metals 16 20 120 14 <u>ل</u> 10 30 12 8 Apr10/11 Apr11/12 Apr25/13 Aav4/15 lar23/74 Viscosity @ 40°C Acid Number (B/HOX 40 1 00 (j) 35 (j) 30 Bu . 중 25 Acid N 20 0.00 Mar23/24 pr25/13 Apr10/16 Mar23/24 Apr10/11 Apr25/13 Apr10/16 Apr2/17 Mar26/20 Apr11/12 vpr2/17 Mar26/20 Apr11/12 Aav4/15 1av4/15 Apr10/1

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 AMTRAK : WC0798936 1401 W STREET NE, HIGH SPEED RAIL 2ND FLOOR Sample No. Received : 05 Apr 2024 Lab Number : 06140629 Tested : 08 Apr 2024 WASHINGTON, DC Unique Number : 10965437 Diagnosed : 09 Apr 2024 - Don Baldridge US 20018 Test Package : MOB 2 Contact: MICHAEL PORTER Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. michael.porter@amtrak.com * - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: (202)870-1399 Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) F:

Report Id: AMTRAK [WUSCAR] 06140629 (Generated: 04/09/2024 12:05:56) Rev: 1

Contact/Location: MICHAEL PORTER - AMTRAK